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DISEASES OF THE CHEST

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Editorial Comment

As DISEASES OF THE CHEST enters its 'xth year, the Editorial Board of the Journal .res to thank the contributors, subscribers, and advertisers for their loyal support during the past year.

STARTING OUR SIXTH YEAR To Charles M. Hendricks, the first editor of DISEASES OF THE CHEST, and to the others who have been responsible for the birth and development of this Journal, we extend our congratulations and we salute them on the completion of five years of work well done.

To each and every one of you, the editor in chief and the members of the editorial staff of DISEASES OF THE CHEST extend their best wishes for a Very Happy New Year.

DISEASES OF THE CHEST is unique, insofar as it is the first journal to be published on a particular specialty directed to the physician in the general practice of medicine. That the idea is a sound one, is borne out by our large and growing circulation. This policy of publishing short, practical articles on the subject of chest diseases, is meeting with favor, and we note with much pleasure that other specialties are contemplating the publishing of similar journals to further this idea in medicine.

It is the purpose of the Editorial Board of DISEASES OF THE CHEST to continue the policy as established by the American College of Chest Physicians for this journal. Articles which are of practical value and are written in a style appealing to the physician in the general practice of medicine will be given preference in the columns of DISEASES OF THE CHEST. Our editorial pages will be an open forum for a frank discussion of subjects relating to chest diseases. Other items of current interest will appear from time to time in the pages of this journal.

The editors will be pleased at all times to receive comments from the readers of the journal and suggestions for the improvement of the material published in the journal will be welcomed. An invitation is hereby extended to any qualified physician to submit original manuscripts for publication in the journal.

We hope that 1940 will see a continuation of our journal's growth and we feel sure that with a continuation of our present support further strides in the early diagnosis and treatment of chest diseases will be made.

F.W.B.

EARLY DIAGNOSIS OF TUBERCULOSIS The past years have seen concerted efforts in a drive against our traditional foe—tuberculosis—and they are bearing fruit. We have noted with a gratifying satisfaction the steady decline in the mortality rate, year after year. Figures, only recently released by the Metropolitan Life Insurance Company, reveal a drop of about 10 per cent for the year 1938, as compared to the year 1937. Notwithstanding these glowing reports, however, the ultimate eradication of this dread disease is unfortunately, I fear, a small speck on a distant horizon. Notwithstanding the great strides we have made, the long way that we have come, tuberculosis is still in our midst and is still a menace of the first magnitude.

This grim reaper takes its deadly toll chiefly from young adult life, among the bread earners, and at the most productive period. It strikes at the very flower of mankind—youth. Therein lies the greater tragedy. It may be well to realize that tuberculosis remains today the leading cause of death in the age period, 20 to 40; and to realize that of all our young women who die between the ages of 15 and 25, over one half die from this disease.

Essential to any program of tuberculosis control, is early diagnosis, for this means the institution of the proper measures at the most effective time. Formerly, the early signs and symptoms were stressed; and the public was urged to become familiar with them, and seek medical advice at their first appearance. This is still important and it is not amiss to give a brief review of the cardinal ones. They are: unexplained fatigue, lack of pep and endurance, a loss of weight, a cough that hangs on, a slight afternoon or evening fever, frequent chest colds, persistent or oft-repeated attacks of hoarseness, blood spitting and pleuritic chest pains. Any or all of these may be present in a given case.

We know today, that to insure an early diagnosis, it must be made before and not after symptoms appear. Only too often when symptoms develop, the disease has progressed apace. The diagnosis of tuberculosis can be made in the pre-symptom period by methods now at our command. It is done by periodic health examinations, the examination of all known contacts of an open case of tuberculosis, and by large case finding surveys in the school, college, industrial and other groups. In this work, the tuberculin test, the x-ray and the sputum examination, are preeminent. With extremely few exceptions, a positive tuberculin test means that there is an infection in the system by the tuberculosis germ—the tubercle bacillus; and conversely, a negative test means that there is no such infection. The positive reactors are then x-rayed to determine whether or not clinical disease, or merely an implantation of the infection, exists. Of all the methods of investigation, the x-ray examination is the most important. We have the slogan that tuberculosis must be seen rather than heard. A reliance upon the physical examination alone is obsolete and fraught with error. The examination of the sputum for tubercle bacilli detects the open cases—the spreaders of infection.

I venture the assertion that if all open cases be segregated, or by treatment converted into closed ones, if every person be given the tuberculin test at proper intervals, and the positive reactors x-rayed periodically down through the years — tuberculosis could be wiped off the face of the earth.

We have, therefore, the means for the prevention and control of this disease; and there remains only to put them into operation. We hold before us the vision of humanity being freed of the shackles of this scourge; and in a large measure, it will be with the support and cooperation of the medical profession, that this will be brought about. C.H.H.

IMPORTANT ANNOUNCEMENT Due to the increase in the cost of paper stock and labor entering into the publishing of DISEASES OF THE CHEST, the Editorial Board of the Journal has found it necessary to increase the present subscription price of the Journal from $2.00 to $2.50 per year.

It has been the policy of the Editorial Board of DISEASES OF THE CHEST to produce a worthwhile publication at the lowest possible price, in keeping with production costs. At such time as conditions will permit, the subscription price will be adjusted to meet the production costs prevailing at that time.

F.W.B.

President's New Year Message

At this Season, the beginning of a new year, I wish to extend greetings and a few words of thanks to the Fellows of the American College of Chest Physicians for their untiring efforts in behalf of the College.

A survey of the work accomplished since our annual meeting last May brings a glow of satisfaction in the knowledge that all have been working toward a mutual goal, resulting in splendid attainments.

The College membership has been increased by the admission of seventy nine Fellows since the publication of our 1939 Pneumothorax Directory. A total of twenty five states report the existence of Tuberculosis Committees. I feel this number may be increased before the date of our next annual meeting. Many of the states report complete organization, or very nearly so. It is well known, of course, that the State of Pennsylvania was the first to report fulfillment of this work. I think it most timely to mention the one hundred per cent organization of the State of Indiana, of which Dr. James H. Stygall is Governor. It will be recalled that in the August 1939 issue of DISEASES OF THE CHEST he reported the organization of sixty three county societies, comprising a total of two hundred and twenty nine doctors as members of these County Committees for the Advancement of Tuberculosis Organization in Medicine. Certainly, Dr. Stygall, and the State of Indiana as a whole, is to be commended most highly for this splendid showing, and I am sure it is gratifying to them to know that their efforts have resulted in complete accomplishment of their aims.

In addition to the States in the Union, it is noteworthy that Norway is represented by the appointment of the eminent Dr. Carl Semb as Governor. Also, Governors have been appointed in India, The Philippine Islands, Hawaii, Australia, Canada, Cuba, Mexico, Ecuador and Puerto Rico.

In closing, I wish to express my fond hopes that every member of the College will make an earnest endeavor to attend our meeting in New York next June. One hundred and two physicians registered at our last meeting, representing approximately twenty per cent of our entire membership at that time. This year's program promises to surpass by far our previous one. Our Scientific Program, Entertainment and General Arrangements Committees are promising great things in store for us—so let's boost the percentage of attendance and come prepared for an interesting and enjoyable session.

RALPH C. MATSON, M.D., *President*
American College of Chest Physicians

Pulmonary Tuberculosis From a Public Health Standpoint

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Despite all efforts directed toward its control during the past ten years, tuberculosis still accounts for the greatest number of deaths between the ages of 15 and 45. It therefore merits an even more aggressive campaign for its eradication than is at present employed. Two all-important facts on which we can base our hopes of ultimate success in such a campaign stand out in our increasing knowledge of the disease: (1) tuberculosis is preventable and (2) it is curable.

When Koch discovered the tubercle bacillus in 1882 and proved that it was the cause of phthisis, he proved also, by producing it in animals and recovering the organism from the lesions, that it was a communicable disease. Since it is a communicable disease, it can be prevented by isolation of the active case, thereby preventing contact of others with the tubercle bacillus. Theoretically, if every case of pulmonary tuberculosis were isolated there would cease to be any problem of tuberculosis control.

That the disease is curable, whether the lesion be in the parenchyma of the lung or in the bone, few will deny. The most important criterion of the curability is the size and extent of the lesion. Statistical studies in large sanatoria, including 5 and 10 year follow-up studies of discharged patients, reveal that up to 90 per cent of patients with minimal activity can be cured. The percentage of cures among patients with moderately advanced, or advanced lesions, under an equally adequate routine, falls with the extent and severity of the disease. The fact that well over 75 per cent of all cases admitted to most sanatoria fall into the classification of advanced disease shows clearly the need of diagnosis before the advanced stage is reached.

This early diagnosis has been difficult to obtain for two reasons; first, tuberculosis in any stage may be symptomless—and the patient, therefore, does not seek medical advice; and, second, physical diagnosis is not sufficiently accurate to pick up minimal or moderately advanced disease in a very high percentage of cases. At Trudeau Sanatorium where the results of roentgen and physical examinations were compared in a series of 600 cases, it was found that approximately 25 per cent of far advanced, 38 per cent of moderately advanced, and 52 per cent of minimal disease revealed no physical evidence of pulmonary tuberculosis. The fluoroscope and the x-rays have become vital parts of our armamentarium in the fight against this disease.

The most important part of the entire problem is the finding of the active cases. If they can be found before the lesions become open, the patients have a better chance for cure and will not become infectious to others. If the lesions are already open, steps can be taken for the isolation and care of these patients, so that they will cease to be a menace to others. The national, state, and local tuberculosis associations are agreed upon this particular phase of the problem and have pledged themselves to aid in finding the active and early cases.

Since 1925 the leaders in this work have advocated school surveys by means of the tuberculin test to find contact cases. Through them the active cases, which are serving as carriers of the disease, can be traced.

It is true that all cases of active disease among the students would be revealed by roentgenological chest examinations, but since not all contact cases have demonstrable calcified or fibroid lesions, many important clues as to the source of the contact would be lost, if x-rays alone were relied upon. The finding of active cases in the schools is important, but the chief objective of the survey lies in finding the potentially active case and through it the unknown active case which is serving as a source of infection in the home. This is probably an adult who thinks he

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has "catarrh", asthma, or bronchitis. For this purpose, a follow-up campaign to the homes of the positive reactors is carried on by a trained social worker who obtains the complete family history and urges all members with suspicious symptoms to go to their family physician for roentgen examination of the chest. In this manner the probable source of the tuberculous infection can be found.

The accuracy of the tuberculin test has been questioned, but despite recent attacks by Lumson and others, authorities such as Long, Bush, Douglas, and Myers state that tuberculin testing surveys still furnish the best means of epidemiological study.

During the past eight years, tuberculin surveys, financed by the San Diego Tuberculosis Association, have been carried out in the San Diego high schools and State College. In 1932 permission for skin tests was given by parents in 1581 cases; in 1939, 3292 students were tested. Roentgen examinations of the chests of all the positive reactors were made and the families were interviewed.

Since 1932, from a total of 14,533 students tested, there have been 2904 positive reactors, slightly less than 20 per cent (19.9%). All nationalities were represented. Thirty-four clinically active cases of tuberculosis were found. Several hundred latent cases were classified as deserving of observation, because of massive calcification in the parenchyma or hilus or because of definite areas of fibrosis in the upper half of the lung. These patients, after their chest roentgenograms had been reviewed, were turned over to their family physicians with letters explaining the need of observation and regular roentgen examinations of the chest, as well as restriction of routine during the dangerous 'teen age. If these patients were unable to afford private care they were observed at the chest clinics of the San Diego Tuberculosis Association.

Of the 34 active cases, 3 were classified as far advanced, 8 as moderately advanced, and the remainder, 23, as minimal. All were given good prognoses by their various physicians and, up to the present time, only one case has terminated fatally so far as the writer knows. In the face of the high mortality of patients in the 'teen age group, who present themselves to their physicians with symptoms of active disease, this record speaks for itself.

A study of the results of these surveys disclosed another interesting and important point. The incidence of clinical disease was highest among the positive reactors of the Negro, Mexican, and Oriental groups. It is true that the number of individuals tested in these groups was proportionately small, but the figures still suggest a greater incidence of disease among these contacts. It is our opinion, therefore, that particular emphasis should be placed upon tuberculin testing surveys in schools, where large numbers of Negroes, Mexicans and Orientals make up the attendance.

Many parents refuse to give their permission for the test and many individuals in the families of the reactors, who have symptoms, refuse to go to their physicians for examination. However, it is conceivable that some impression is made on even the most skeptical, so that if symptoms increase, there will be sufficient concern to stimulate investigation. More and more, parents are appreciating the value of the survey.

Aside from the public health importance of finding the early case, the economic importance to both the individual and the state is considerable. Individually, the patient with the early lesion stands a good chance of early cure and consequent economic independence. From the point of view of the state, the expense of caring for the case with the minimal lesion for a few months is negligible when compared with the expense involved in caring for the far advanced case over a period of years, or even for life.

Certain municipalities in the east have been very much impressed with this fact. As a result, the city of Detroit has appropriated sufficient funds for wide-spread tuberculin testing in the city, with roentgen examination of the chests of all the positive reactors. Thus far several hundred thousand individuals have been tested and hundreds of early cases found. Translated into money value, the saving to the state, which has been worked out in dollars and cents, has been considerable. Because of its success in Detroit, other cities in the midwest are planning similar surveys.

Careful postmortem studies have revealed that most adult individuals, up to 20 years

ago, had at some time or other been infected by the tubercle bacillus. These findings at post-mortem examination are decreasing. Yearly tuberculin testing surveys show a steady decline in the number of tuberculin positive reactors also.

We are gaining ground in the battle against tuberculosis. Nevertheless, tuberculosis still takes first place as the cause of death during the most active years of life. We cannot escape this fact. Therefore, any aggressive means that shows promise of vanquishing or lessening the power of this common enemy, deserves our active support.

Demonstration of Cancer Cells in Pleural Fluids

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St. Louis, Missouri

The study of section sediments of fluids is an invaluable procedure in the diagnosis of malignant effusions. While the method used is an old one, it had been generally overlooked, and it was only in the last few years that it has become deservedly a more common procedure. It is easily done, and the results so striking that it should be used routinely in the study of all fluids of suspected malignant origin.

Mandelbaum [1] in 1900 sectioned a purulent exudate and demonstrated actinomycosis. In 1917 [2] he described the method used in studying the cytology of malignant effusions. This method forms the basis for all future work, though it has been modified by several to some advantage.

The original method is as follows: The fluid is placed in a large Erlenmeyer flask and allowed to stand over night in an ice box. The supernatant fluid is decanted and the sediment poured in a large centrifuge tube and centrifugated for at least twenty minutes at moderate speed. The supernatant fluid is again decanted and the sediment hardened with a solution of 10 per cent formaldehyd, or Zenker's fluid, for twentyfour hours. The fixed sediment is then treated as ordinary tissue by running through alcohols, embedding in paraffin, and staining with hematoxylin eosin. The final sediment is a little conical button, which is cut from the above down, so as to include all cellular elements.

A simple modification, as used by Foot, [3] is the addition of glacial acetic acid to bring the acid percentage to two percent. This prevents coagulation, which often occurs in fluids and interferes with good sediments. The remaining procedure is the same as Mandelbaum's. Foot further suggests the use of Mason's trichome, a light green stain, because of its good staining of the nucleoli. However, any stain may be used.

The advantage of the section sediment method is that the cells in fluid may be studied in natural relationship to each other. A simple slide smear is usually unsatisfactory. A large amount of fluid should be used whenever possible. There are times when very few tumor cells are found. Therefore, the more fluid used, the greater chance there is of finding them. However, typical cancer cells may be found in just a few cc. of pleural fluid. It is desirable to study several slides from repeated tappings in doubtful cases.

A positive diagnosis of malignancy may be made with great accuracy. A negative diagnosis does not necessarily rule out its presence, as the effusion may not contain any tumor cells. One may expect to find cancer cells whenever cells are "shed" into the fluid. (Fig. 1).

The chief criteria of diagnosis of cancer cells are as follows: The most definitely diagnostic finding is the presence of fragments of tissue with characteristic arrangement of cells with glandular or papillary formation about a stroma. (Fig. 2.)

The next most characteristic finding is

the presence of groups of deeply stained cells which stand out conspicuously among the various types of other cells present and give the section a mottled appearance, especially noticable under low power magnification. (Fig. 3.)

The mistakes and difficulties in diagnosis lie in those cases in which we have single tumor cells, or small groups of cells. (Fig. 4.) In many long standing non-malignant effusions there are large mesothelial cells present which may readily be confused with tumor cells. (Fig. 5.) These cells may also show irregularities in size, they may be multinucleated or may be hyperchromatic, though not usually to the extent of malignant cells.

Another factor in differential diagnosis is the presence of mitotic figures. (Fig. 6.) Zemansky,[4] who made one of the earliest studies of section sediments, states that in a large series of fluids studied, it was always pathognomonic of malignancy. Karp,[5] and also Foot state that mesothelial cells may show mitosis frequently enough to cause confusion. We have but rarely observed mitosis in proven non-malignant fluids. Certainly, the presence of numerous mitotic figures is highly suggestive.

Vacuolation and "signet ring" forms are also significant, but not pathognomonic of malignant cells as they may occur in other effusions.

The relationship of the nucleolus to the nucleus, by actual measurement, is of some importance. Quensil,[6] states that in malignant-cells this ratio is high, ranging from .20 to .40. While in non-malignant cells it is below .20. The value of this method has also been brought out by Foot. It involves the measurement of characteristic or suspicious cells with an ocular micrometer. The presence of large nucleoli in cells is always significant.

In forty cases of pleural effusions, due to malignancy, section sediments showed carcinoma cells in twenty-nine. A negative diagnosis is presumptive evidence against malignancy, but does not, of course, rule it out. Some of the reasons for a negative diagnosis follow: There may be no cancer cells in the fluid, as in those effusions which are due to obstruction of a venous return. A tumor may be tightly encapsulated and, therefore, not "shed" cells. This is apt to occur in sarcoma. Only one out of three sarcoma effusions showed recognizable sarcoma cells. (Fig. 7.) The cells may disintegrate if the fluid is not quickly and properly handled, though they may remain in good preservation even after standing about long enough to have bacterial contaminations. The metastatic cases of pleural effusions, such as those arising from the breast or ovary, show 100 per cent positive for cancer cells. The missed cases are more apt to be due to primary lung tumors.

Certain of the non-malignant cases of effusions simulate cells seen in the malignant types. This is especially true of long standing transudates in which clumps of mesothelial cells strongly resemble malignant cells. These non-malignant forms may show multi-nucleated types, hyper-chromaticity, and, occasionally, even mitotic figures. As yet there are no clear cut criteria for their positive identification. Repeated examination of many fluids, with careful corroboration of post mortem and biopsy material, will unquestionably help clear up the problem.

Conclusions

The section sediments of pleural fluids are of tremendous value in determining the etiology of the effusion. In malignant effusions one can expect to find cancer cells in at least two-thirds of the cases. Further criteria are necessary for the determination of the isolated cell.

4500 Olive St.

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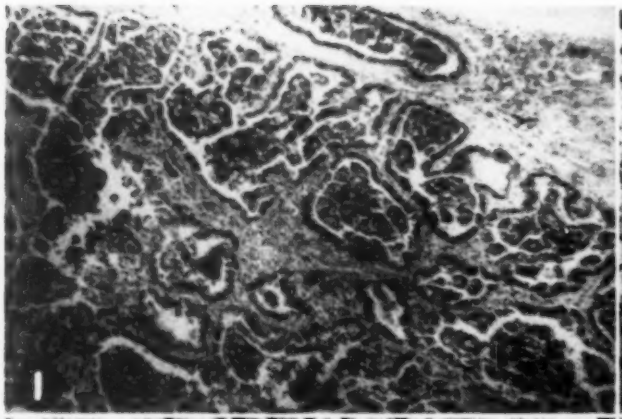

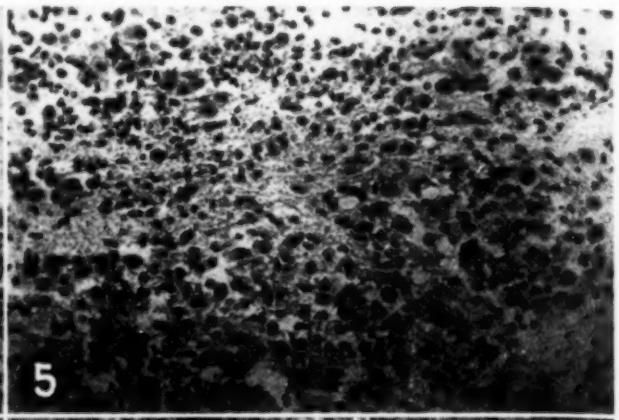

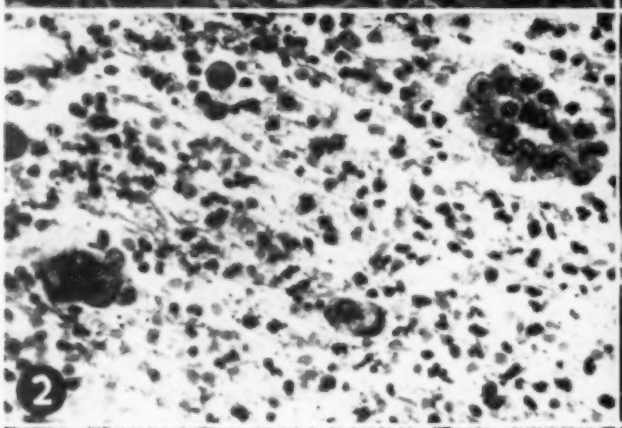

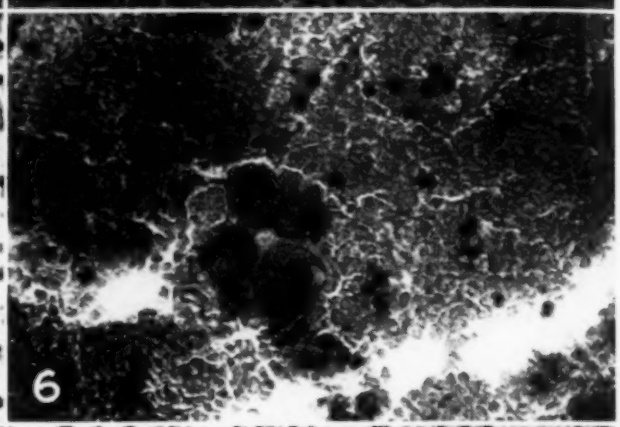

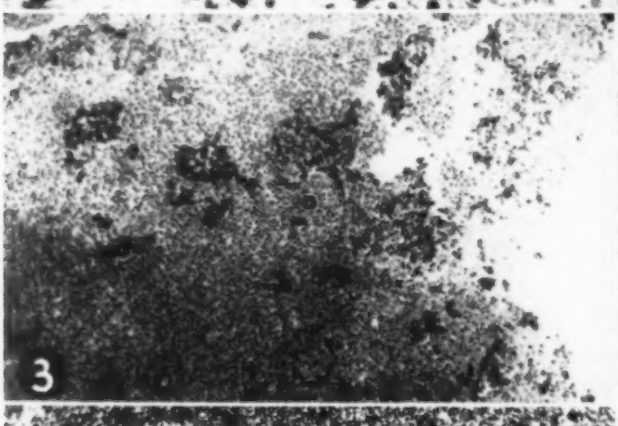

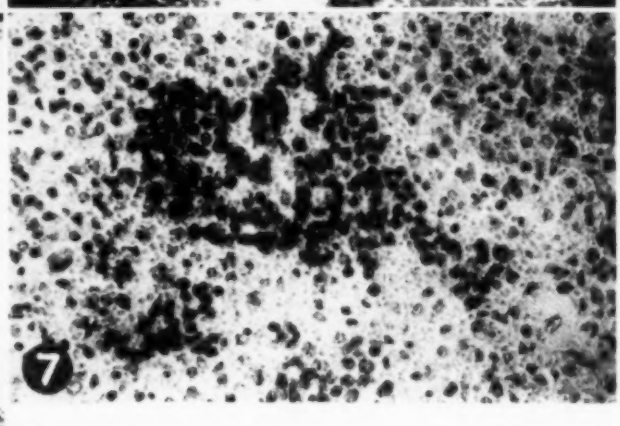

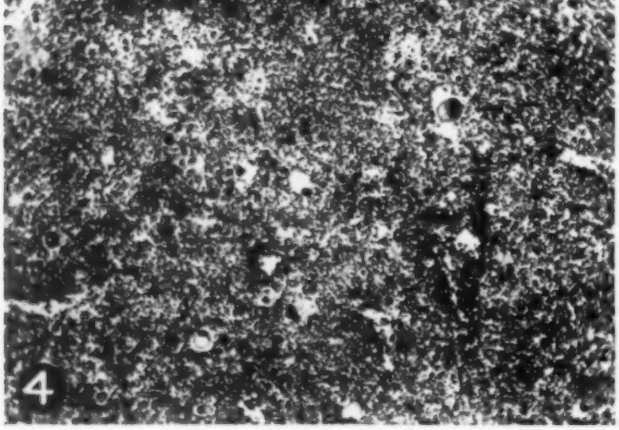

Fig. 1—Section of lung showing adeno-carcinoma within a pleural lymphatic, ready to break through into the pleural cavity. (H.P.)

Fig. 2—Pleural fluid from same case as Fig. 1. Note alveolus, also isolated tumor cells. (H.P.)

Fig. 3—Pleural fluid from same case of carcinoma of lung. Note conspicuous groups of cells giving section a mottled appearance. (L.P.)

Fig. 4—Pleural fluid from a case of Primary carcinoma of the lung. Note isolated tumor cells. (H.P.)

Fig. 5—Pleural fluid from a case of long standing passive congestion. Note large mesothelial cells. (H.P.)

Fig. 6—Pleural fluid from a case of metastatic carcinoma of the breast. Note mitotic figure. (H.P.)

Fig. 7—Pleural fluid from a case of metastatic sarcoma of the leg. (H.P.)

A Note on the Early Diagnosis of Pulmonary Tuberculosis

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The incidence of pulmonary tuberculosis is very high in practically every country on earth, but especially in India. In 1933, Megaw estimated that there were probably 2 million cases of tuberculosis in this country, which has a population of approximately 350 millions. And even such an estimate was probably much too low.

The scanty statistics regarding tuberculosis deaths that are available in India show that there were nearly 51,000 deaths from tuberculosis of the lungs in 1934. These figures clearly indicate the high morbidity and mortality rates of the disease here, and it is my opinion that these rates are still increasing. That the morbidity and mortality rates of the disease must be lowered, and as quickly as possible, is obvious. And it seems to me that the first step in this direction should be to secure early and accurate diagnosis, for that not only alters materially the prognosis of the actual cases, but allows preventive measures to be adapted as far as dissemination of tuberculosis from these cases is concerned.

Detection of pulmonary tuberculosis at the preclinical stage, though an ideal thing, is being made at the present time only in a limited number of cases. The number of such detections can, however, be increased by routine x-ray examination of all contact cases, especially of those who are in the age period of maximum incidence.

Once the disease has reached the clinical stage, the responsible task of early diagnosis rests mostly with the general practitioner—for the patient first comes to him and not to the specialist. The general man should see to it that every suspicious case is thoroughly investigated; that a history is carefully taken; that a bedside examination is made, with an extra attention to the chest; and that special investigations are then undertaken, where necessary.

The onset of tuberculosis is usually insidious and various indeed may be the symptoms at this stage. Important amongst them are: failure in general health without obvious reasons, easy fatigueability, simple feverishness or actual rise of temperature towards the evening, burning sensation in the hands and feet, dry cough, vague pains in the chest, progressive loss of weight, dyspeptic and neurasthenic symptoms and, in some cases, hemoptysis. Symptoms pointing to the chest, naturally draw attention to that part of the body, but the symptoms referable to other systems are to be especially borne in mind. A positive family history, that is a history of contact with actual cases and a history of pleurisy in the past, should double the suspicion of the clinician.

Clinically suggestive signs of early disease are: phthisical habitus, increased pulse rate during resting conditions, low blood pressure, localized deficiency of movement in the chest, dubious impairment of percussion note, weak air entry, jerky breath sound or harsh breathing and fine crepitations. At times these adventitious sounds are made obvious only after a cough. Persistent crepitations when heard over the apices of the lungs are particularly suggestive of tuberculosis. While speaking of these clinical signs it is necessary to stress their limitations. Even the expert may fail to detect any abnormality on clinical examination in certain cases of pretty far advanced pulmonary tuberculosis. This statement is especially applicable to some cases with exudative and fibrotic lesions.

Though various special examinations for the detection of this disease are available, undoubtedly the two most important are sputum examination and radiography. Demonstration of tubercle bacilli in the sputum constitutes the surest evidence of the disease, but unfortunately, the sputum is not often available in early cases and even when available may not show the bacilli. However, if sputum is available it should be examined carefully and, if necessary, repeatedly.

The value of the x-ray in the diagnosis of

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tuberculosis cannot be overestimated. X-rays not only give a presumptive evidence of the lesion and, incidentally, serve as a valuable guide to treatment. In assessing the relative values of sputum examination and radiography it may be stated that x-rays help in the early detection of large numbers of cases only in the cities and towns, but that outside of these places, where the x-rays are not always available, sputum examination still remains practically the only method of clinching the diagnosis in a suspected case. Very valuable though x-ray examination is, it also has its limitations and may fail to reveal any abnormality in many early cases which are highly suspicious on clinical grounds. In such cases the x-ray examination should be repeated at short intervals.

A positive tuberculin test is a definite proof of tuberculous infection. However, this might easily be an infection of early life and, therefore, not necessarily an indication of active tuberculous disease. A negative test is very valuable, as it rules out the possibility of tuberculosis in 90 per cent, or more, of the cases. An increased blood sedimentation rate indicates activity of lesion and is, therefore, more important for prognosis than for diagnosis, especially because an increased rate may be found in other diseases too. The same is probably true of Arneth and other similar counts.

In conclusion, it should be emphatically mentioned that at the present time the guiding principle of every practitioner should be to consider every suspected case tuberculous until proven otherwise by repeated sputum and x-ray examinations.

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The Modern Treatment of Pulmonary Tuberculosis*

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Every case of pulmonary tuberculosis should be treated as soon as the diagnosis is made. To be completely successful, and to guard against later relapse, treatment should be continued until all symptoms have subsided, serial roentgenograms show healing, and the sputum remains negative for tubercle bacilli.

In the medical treatment of pulmonary tuberculosis, chief reliance must be placed on rest. In addition to this, perfect hygienic surroundings; fresh air; good, nutritious foods; lack of worry; and, above all, the cooperation of the patient to regulate his life are essential.

The ideal site of treatment for a tuberculous patient is, of course, in the sanatorium. Effective isolation can be brought about only by removing the open case from his home. Also the sanatorium provides the patient with the necessary instructions and habits for taking care of himself after discharge.

In some cases, medical treatment alone often suffices to bring about a good result, but in the majority of cases, collapse therapy of one kind or another is essential. At the present time, 63 per cent of all our patients in the sanatorium are under some form of collapse therapy.

In the last decade, surgery has come to play a prominent role in the treatment of pulmonary tuberculosis. And the whole question of surgery in pulmonary tuberculosis may be summed up in the words "collapse therapy". All surgical procedures consist in collapsing the diseased lung, the simplest method for collapsing the lung being artificial pneumothorax. Atmospheric air is injected between the parietal and visceral layers of the pleura, the lung drops away from the chest wall and becomes markedly reduced in size, and its movements are restricted.

The lung may be kept collapsed by repeating the injections of air over a long period of time. In some cases of bilateral disease,

* I am indebted to John A. Foley, M.D., Chief-of-Staff, and John J. Ahern, M.D., Resident Medical Officer, for valuable information received in the preparation of this paper.

this procedure is performed on both sides (bilateral pneumothorax).

During the year 1938, we had 13,100 pneumothorax refills, whereas in 1934, only 4,647 refills were made, showing a marked increase in this form of collapse therapy.

Adhesions may prevent good collapse of the diseased lung. They are often distributed over the diseased parts of the lung where collapse is most important.

All are agreed as to the advisability of converting an unsatisfactory collapse into a satisfactory one by severing the offending adhesions by means of intrapleural pneumonolysis. Two methods of cutting adhesions are available, namely, the galvanocautery, which we employ, or the electro-surgical method.

During the past year (1939), over 100 pneumonolyses have been performed in comparison to 7 which were done back in 1934.

Operations on the phrenic nerve are sometimes performed in cases of basal tuberculosis. The purpose of the operation is to paralize the corresponding half of the diaphragm, thus giving additional rest to the diseased lung. One may perform either permanent or temporary interruption. The former is known as phrenicectomy, and the latter, phrenicotomy or phreniclasis.

In permanent interruption, the nerve is cut and the distal end grasped and twisted from its diaphragmatic bed. In the case of simple phrenicotomy, the nerve is merely cut across, and in phreniclasis, the nerve is crushed. The operation that we favor and perform is that of crushing about one inch of the nerve. This procedure will paralyze the corresponding diaphragm for three to seven months.

At the present, phrenic interruption is rarely used as an independent procedure and is usually supplemented by other types of collapse.

Oleothorax consists in the use of massive quantities of an antiseptic oil in the pleural cavity for therapeutic purposes. We employ oleothorax therapy under the following conditions:

(a) For the treatment of tuberculous empyema following pneumothorax—Disinfection Oleothorax.

(b) To re-establish collapse in cases where air refills have failed to maintain proper collapse—Compression Oleothorax.

(c) To prevent re-expansion of the lung when pneumothorax cannot be maintained by air refills—Inhibition Oleothorax.

We have been able to obtain fairly good results by the use of 5 per cent gomenol in paraffin oil.

Our experience has been too recent to allow us to determine how important a place extrapleural pneumothorax will take among the methods of collapse therapy in pulmonary tuberculosis. We do not advise this procedure as a substitute for intrapleural pneumothorax or thoracoplasty, but as an additional procedure indicated in cases in which the former had failed or the latter was contraindicated.

Extrapleural pneumothorax is a mtheod of collapsing pulmonary lesions by the removal of a portion of either the third or fourth rib and the injection of air into the space between the endothoracic fascia and the parietal pleura in contradistinction to intrapleural pneumothorax, where air is injected between the parietal and visceral layers of the pleura.

There is no doubt that patients will submit more readily to an extrapleural pneumothorax, where a portion of one rib is removed, than to a thoracoplasty, where a number of ribs must be removed.

Within the past two years, 1938-1939, we have performed 50 such operations with very favorable results. There is no doubt that it will aid many cases where other types of collapse therapy are impossible and contraindicated, and is certainly deserving of more universal trial.

Thoracoplasty consists in removing some or all of the ribs so as to permit a collapse of the thoracic wall with a consequent collapse of the underlying diseased lung. It is rather difficult to enumerate the exact indications for thoracoplasty, the final available hope for the tuberculous patient. We usually recommend this procedure in suitable cases, where other types of collapse therapy have been unsuccessful. Cases submitted to thoracoplasty should be carefully selected by the phthisiologist and the thoracic surgeon.

With the advent of extrapleural pneumothorax, we find that we are not forced to perform as many thoracoplasties as in the past. In thoracoplasties, we remove the whole

rib from its articulation with the spine to the juction with the cartilage. Only three ribs are removed at each stage. We remove the upper three ribs at the first stage, the periosteum being touched with 10 per cent formalin so as to prevent too rapid bone formation.

After three to four weeks, the patient is submitted to the second stage. If a third stage is required, it is performed after an interval of three more weeks.

It is paramount to remember that rest is still of the greatest importance in the treatment of pulmonary tuberculosis. Collapse therapy of whatever nature is not to be considered a substitute for bodily rest, but a supplementary and complementary aid to insure final success.

Despite the fact that 65 per cent of the cases admitted to the sanatorium have far advanced disease, in many of whom collapse is limited, we have found that an intensive collapse therapy program has definitely helped to reduce the morbidity and mortality of pulmonary tuberculosis.

COLLAPSE THERAPY AT THE BOSTON SANATORIUM—1934-1938

Type of Collapse	1934	1935	1936	1937	1938
Pneumothorax Refills	4,647	5,771	7,615	12,700	13,100
Pneumonolysis	7	38	58	84	91
Phrenic Operations	51	23	13	22	29
Oleothorax Treatments	61	87	102	114	271
Extrapleural Pneumothorax	0	0	0	0	26
Thoracoplasty	19	45	27	19	14

Tuberculosis in Athletes

C. B. YOUNG, M. D. and E. G. FABER, M. D.
Tyler, Texas

Tuberculosis usually has been considered a disease of the weak, the malnourished and the underprivileged. Indeed, many have taught that the strong, healthy, "athletic" body was the best of all safeguards against tuberculosis. In critical analysis, just how true are these generally accepted and common beliefs? Is the athlete any more secure from the ravages of tuberculosis than the average person? We all know specific examples of famous and once prominent athletes who have died of tuberculosis. We might mention Christy Matheweson, the great pitcher; Tom Hinckey, of Yale football fame; and Joe Gans, George Dixon and the original Jack Dempsey, all famous fighters.

In this paper we desire to reopen the subject for further investigation in the hope that further study may be carried on in high schools and colleges. Thousands of our young men are engaged in strenuous athletic competition, with its inevitable grind of the long training period and the even more exhausting playing conditions of the modern game. This is especially true of basketball—since the elimination of the center jump last year. The spectators must be entertained and, therefore, the game must be made faster and faster.

Since all of these boys are amateurs and are supposedly playing for the love of the game and the glorification of the school, is it not the simple duty of the school authorities to do everything necessary to insure that none of these athletes are victims of early and symptomless tuberculosis? Tuberculosis authorities the world over are now in practical agreement that a tuberculous infiltration may exist for years without producing any symptoms whatsoever. Indeed, no less authority than the late Lawrason Brown, of Saranac Lake, often has stated that tuberculosis is almost never contracted after the age of twenty-five. This simply means that in our high schools and colleges of today we have about 60 per cent of our tomorrow's deaths from tuberculosis.

It generally is conceded by all experienced

tuberculosis physicians that the tuberculin test and x-ray, or the routine x-ray alone, have almost entirely replaced the stethescope in the diagnosis of early tuberculosis. More and more we hear the phrase, "Tuberculosis should be seen, not heard." However, we must consider the fact that only 16.2 per cent of the Texas State Sanatorium [1] admissions last year were minimal cases as evidence that we are still *hearing* tuberculosis in our patients and not *seeing* it. Why are these standard procedures not used as a regular and routine part of the physical examination of athletes in our high schools and colleges? Is it because school officials and team physicians do not recognize the problem of tuberculosis in our young adults, or is there still some inherent belief in the invincibility of the athlete?

In an attempt to learn what the leading schools and universities of the United States were doing to find tuberculosis among their students, we sent a form letter to the directors of student health in forty-four fairly representative universities and colleges. This questionnaire contained only two inquiries; namely:

(1) Do you, as a part of the regular physical examination required for athletes, include the tuberculin test and x-ray of positive reactors?

(2) Do you include the tuberculin test as a regular part of the physical examination of all students entering the university?

We received answers from 33, or 75 per cent, of those to whom questionnaires were sent; and 21, or 63 per cent, of those answering, have some definite plan in operation to find early cases of tuberculosis in all their students, or expect to begin one this fall.

It is interesting to note the regional distribution of colleges and universities with case-finding programs in actual operation. (Tables 1 and 2). It is interesting to note that in the Southwest Conference we find not one university with a definite case-finding program. Certainly, we cannot expect to find tuberculosis in our young adults unless we look for it, using all the modern diagnostic methods known. Rice Institute however, plans to use the tuberculin test and x-ray as a routine part of the physical examination of athletes this fall and is to be congratulated on this forward step. We shall watch with interest for the results.

We should like to review briefly some results of outstanding case-finding programs as reported by various schools in the United States. Are these programs actually finding early cases of unsuspected tuberculosis, or are they merely interesting research projects?

The seventh annual report of the Tuberculosis Committee of the American Student Health Association[2] has a number of interesting and extremely important observations, one of which we would like to quote.

"The figures for the active cases alone reveal that among a student mass, but partially covered by tuberculosis testing, four times as much active tuberculosis was diagnosed per thousand enrollment as was found in a large group receiving neither routine testing nor routine roentgenograms, while in a group provided with excellent facilities for routine x-rays of all concerned, there was discovered seven times as much active disease per thousand as among the less fortunate untested, unradiographed body. This would seem to be a decisive answer to the question asked by some correspondents as to whether a modern case-finding program is worth the bother and expense. It may also provide food for thought for those who report, 'no cases of tuberculosis have been found at this school for many years,' or 'We do these tests and order an x-ray for any student *having symptoms*'."

The University of Michigan [3] routinely x-rays the chests of all new students entering the school, with an active case incidence of .57 per cent in men and .56 per cent in women resulting as an average for the past four years. The number of active cases found has been less each year of the program, which undoubtedly reflects the progress of tuberculosis control in the entire state, rather than just at the university. Even with one of the best tuberculosis control programs in the United States, examiners still are able to find one case of active tuberculosis in every 250 to 300 apparently healthy, normal students.

The University of Pittsburgh [4] tuberculin tested 1,618 male students in 1938 and found 17 active cases of tuberculosis, an incidence of 1.05 per cent. Second tests were done on 388 negative reactors with the second strength solution and an additional six active cases were found. In addition, 49 healed cases of adult type tuberculosis were found in the

entire group. It is self-evident that healed tuberculosis cases should not be allowed to participate in strenuous athletics. From these figures, we are forced to conclude that at the University of Pittsburgh, four in every hundred male students would be incapacitated for athletic competition by reason of active or healed tuberculosis.

At the University of Washington [5] approximately 60 per cent of those tested reacted to the tuberculin, with somewhat less than 1 per cent active cases of tuberculosis as an end result.

Yale University [6] tuberculin tested 1,544 students during the school year 1937-1938 and found 16, or 1.03 per cent, cases of active pulmonary disease. Three cases were moderately advanced and required immediate active treatment, while the rest required only advisory treatment.

The University of Pennsylvania [7] is the only school that we were able to find which has completed a special study of tuberculosis among athletes. During the past four years, approximately 560 chest x-rays have been taken of varsity squad members, and five cases of pulmonary tuberculosis have been discovered, an incidence of slightly less than 1 per cent. While this is not a large group, the incidence among athletes seems to be approximately that of the average students.

In the University of Wisconsin, [8] an average of ten cases of tuberculosis per year was found from 1919 until 1933. In the school year 1933-1934, a rather intensive tuberculin testing program was started and 43 cases were reported, an increase of 430 per cent over the ten-year average. Of these 43 cases, 17, as compared with a yearly average of 4, were advised to leave school and take active treatment. Roentgenographical examinations indicated that approximately 5 per cent of the positive reactors, or 1.5 per cent, of all tuberculin tested students had adult type tuberculous infiltration. Approximately 1 per cent of the positive reactors and .2 per cent of those tested had lesions requiring immediate active treatment in a sanatorium or bed rest at home.

In the school year 1937-1938, all new students entering Princeton University [9] were routinely x-rayed as a part of their entrance physical examination. In all, 658 students were x-rayed, with only one active adult case of tuberculosis being discovered. This extremely low incidence probably may be accounted for by considering the economic status of families from which the majority of Princeton students are selected.

During the school year 1935-1936, the University of Oregon [10] made 1,091 tuberculin tests with 457 positive reactors. X-ray examination disclosed 7 minimal cases of pulmonary tuberculosis and one moderately advanced case with positive sputum. In addition,4 apparently arrested cases were found which, we presume, were not permitted to participate in athletics.

We trust you have noted the frequency with which the figure 1 per cent appears among the incidence figures for the various schools. While, obviously, it is impossible to predict the total number of active cases of tuberculosis which might be found in any one school, it seems reasonable to conclude that from 5 to 10 active cases of tuberculosis per 1,000 students could be found among apparently healthy college students in our Texas institutions.

It is estimated that about 20 per cent of our Texas school children are sensitized to tuberculo-protein. How many of these actually have destructive adult type tuberculosis? This, of course, depends upon many factors: the age group represented; the race; and also, to some extent at least, the economic status. Myers [11] states that while we must examine from two to four thousand grade school children to find one case of adult tuberculosis, we need to examine only five to eight hundred high school students.

Rathbun [12] reports that from the years 1923 to 1934, a total of 9,336 high school students over the age of fifteen in Chautauqua county, New York, were tuberculin tested and x-rayed, with an incidence of active adult cases of .7 per cent and an additional .4 per cent of suspicious infiltrations. During the first five years of the study, the incidence was 1 per cent, or one active case for every 100 students examined, without reference to symptoms or history of exposure. During the second five-year period, the incidence dropped to .38 per cent. During the same period, the death rate dropped from 69 per hundred thousand, to 25 per hundred thousand—a decrease of 64 per cent. Rathbun

further states that many of the outstanding cases were big, strapping fellows who were well known high school athletes. He believes that the extra strain, both physical and mental, of competitive athletics was of prime importance in the development of active disease in these boys.

Edwards [13] tested several thousand children in the public schools of New Haven, Connecticut, and a total of 6,393 x-rays were taken. In the age group, six to ten years, not one case of adult type tuberculosis was discovered. In the eleven to fifteen year age group, he found only one case by x-raying 3,879 children. However, when he examined the high school age group, ages fifteen or over, he found six cases in 1,461 x-rays. This would indicate one case per five hundred students examined.

Chadwick [14] in Massachusetts presented approximately the same findings with only one case per 3,200 grade school children examined, and one case for every 460 high school students.

In a study of causes of physical disqualification for athletic competition in Indiana, Patty and Van Horn [15] reported on the results of some 12,000 physical examinations of high school athletes. They report that tuberculosis ranked fifth among the causes for rejection, and that 2.97 per cent of the approximately three hundred boys rejected as unfit to enter high school athletics had tuberculosis. The importance of these figures is minimized by the fact that 65 per cent of the schools reported no boys rejected. All these figures can possibly mean is that some schools examined for possible tuberculosis among their athletes, while others did not and consequently reported no cases.

In the Tyler Public Schools, the tuberculin test is as much a part of the regular physical examination of athletes as the stethoscopic examination of the heart. This past year, we have tested 52 high school athletes, and 11 were sensitive to the 1/000 (.1 mg.) of old tuberculin. The negative reactors were then tested with a stronger solution containing 1 mg. per .1 cc, and 4 additional reactors were discovered. X-ray films were made of the chests of all those reacting to either dilution and thus far we have found one boy* with a suggestive infiltration in the left apex. He has absolutely no symptoms, and his sedimentation rate is 6 mm. in one hour. However, he is a known contact of a boy who is at the state sanatorium at the present time and who probably had positive sputum all last summer.

We should like to present a few cases to illustrate our belief that tubercle bacilli have very little respect for athletic ability.

(Cases 1, 2, and 3 courtesy of Dr. J. V. Sherwood, South Dakota Sanatorium.)

In December, 1936, a sixteen year old high school boy developed a persistant cold with cough and some fever. In January, 1937, he had a pulmonary hemorrhage, and in March of the same year, he was finally x-rayed and found to have generalized tuberculosis with cavity formation. He was admitted to the state sanatorium in April, but the disease was far advanced and he died the following December, just one year after the first symptoms were noted.

At the same time, his high school basketball coach, who had been a rather famous college basketball player, began to lose some weight and developed a slight cough. However, he was not diagnosed as having tuberculosis until the following July. He was admitted to the sanatorium immediately with a positive sputum and both apices involved.

The third case in this series is that of a young seventeen year old girl from the same high school, who developed signs of weakness, fatigue, and pleural effusion, with high fever and signs of acute illness for about two weeks. She was admitted to the sanatorium in February, 1938.

These three cases represent one of the greatest tragedies of preventive medicine. There is little doubt that the coach was the source of the infections in the two high school students. If he had been properly examined with all available medical knowledge while he was in college, his tuberculosis most certainly would have been discovered. We think that you all will agree that one death and two prolonged sanatorium cases is too high a price to pay for simple neglect on the part of school authorities.

(Case No. 4 courtesy of Dr. J. A. Myers, Minneapolis, Minnesota.)

* This case had apparently cleared by Sept. 1, 1939, and his chest x-ray was reported negative for active tuberculosis by a competent radiologist.

The next case is that of a personal friend of mine, a fraternity brother. He came from a small mining town in northern Minnesota where he had been a star high school athlete and fullback on the Junior College eleven and where he took his premedic work. He entered the University of Minnesota Medical school in the fall of 1930, and nothing abnormal was found at his regular entrance physical examination. (They were not doing routine tuberculin tests at that time). The next spring he began to have rather marked symptoms and presented himself to the health service for examination. Pneumothorax was started immediately, and for a time it looked as if his lesion was coming under control nicely. However, a year later, films showed the development of an enormous cavity with adhesions preventing collapse of the cavity. In 1935, I visited him at Glen Lake Sanatorium, near Minneapolis, where he had returned for his fourth and fifth major collapse operations. He had a phrenic evulsion, four stages of thoracoplasty, and two gauze packs before he finally became persistently negative. He still is having pulmonary hemorrhages from a pronounced bronchiectasis, and now they are beginning to consider a lobectomy as his best chance for a permanent cure.

(Case No. 5, courtesy Dr. E. A. Meyerding, St. Paul, Minnesota.)

This boy played high school football the entire fall, but in January he had several hemorrhages and was admitted to a hospital. He had tubercle bacilli in his sputum. This boy had been examined for football the fall before, but the examination did not include the tuberculin test. Undoubtedly, his season of football materially reduced his chances of permanent recovery. In fact, had he been diagnosed before the beginning of football season, he might not have required sanatorium treatment at all.

(Case No. 6, courtesy Dr. E. A. Meyerding, St. Paul, Minnesota.)

The next case is that of a young man who was in one of the smaller colges in Minnesota. In this particular year, the college was champion of the middle west in its class, due in most part to the blocking halfback who was such a splendid physical specimen. After football season, he started to play basketball, but couldn't quite keep up. He was sent to a physician and has been in a sanatorium ever since and has had several thoracoplasties. He has been given up several times, but manages to hang on year after year. Undoubtedly, if this boy had been tested prior to the football season, his tuberculosis would have been discovered then, and he would, in all probability, be a healthy, useful citizen today.

(Case No. 7, courtesy Dr. Charles Ianne, Santa Clara County Hospital, San Jose, Calif.

This boy was an outstanding player on one of the nation's best football teams of 1936. He played safety so dangerously against two of the best ends in the United States in the first Sugar Bowl game at New Orleans on January 1, 1937 that L. S. U. consistently kicked out of bounds rather than take the chance of trying to stop him. Yet, within 26 days after that game, he was in bed with a high fever and a tentative diagnosis of pneumonia. However, sputum tests were positive for tubercle bacilli, and a definite cavity was present. He has had a bilateral pneumothorax with intrapleural pneumolysis on the right side. At the present time, he is studying law at Santa Clara University. We should like to quote a part of his last letter to us, dated March 17, 1939:

"I played my last game on the first of January, 1937, in New Orleans against L. S. U. In retrospect, I can see now that I was very ill at that time and I did not know what was the matter with me. I went to bed 26 days later and did not even put my feet on the floor for over six months."

This boy actually played college football all fall with active tuberculosis, which would most certainly have been discovered had he been tuberculin tested and x-rayed. He even coughed blood several times while playing, but apparently coaches and trainers thought that it would be impossible for such an outstanding athlete to have tuberculosis. Permit us to quote again from a letter we received from this boy on January 21, 1939:

"I know from experience and what I have read that a case like mine might have been avoided if proper examinations would have been made at the time when they would have done the most good."

(Case No. 8, courtesy Dr. Walter Rathbun, Cassadaga, New York.)

This last case is an excellent illustration of the educational value of tuberculin testing programs in high school. This boy played bootball and basketball in high school and then went on to college where he started to play football. One day during a practice session, he coughed up a little blood. He immediately consulted the college physician, who told him that he probably had bronchitis. He insisted upon an x-ray examination, whose value he had learned in high school. As a result of this lad's high school knowledge of tuberculosis, he was able to demand and get a proper physical examination, which resulted in his complete recovery under sanatorium treatment. He might have been permitted to continue playing football until all chances for recovery had been lost.

These cases represent only a very few of the hundreds of ex-athletes who have been treated for tuberculosis in the United States. There are no figures available to determine the total number of athletes in the United States, who actually have played football and basketball while suffering from early tuberculosis. However, let us be conservative and agree with Myers, Chadwick, and Edwards that there is at least one case of tuberculosis to every five hundred high school students. The rate is undoubtedly higher among college athletes, but let us again be conservative and estimate one case of tuberculosis to every two hundred students.

In Texas, we have approximately 25,000 boys playing class A, B, and C high school football; another 15,000 playing high school basketball; and at least another 10,000 engaged in all college competitive athletics. These figures do not include junior high athletics, where the risk is less on account of the age level, or the undertermined number of girls playing basketball. If we assume that one in five hundred boys actually has adult type tuberculosis, then we had fifty cases of unsuspected, symptomless tuberculosis on the Texas high school football field last fall.

Assuming one case in every 200 college-age athletes, we had another fifty engaged in competive athletics in the Texas universities and colleges. It obviously is impossible to find these cases without using the x-ray. Ideally, every high school or college athlete should have a chest x-ray at the beginning of the playing season. However, x-rays are expensive, and since we do not expect to find more than 20 per cent of high school students and 50 per cent of college students who are sensitive to tuberculo-protein, we can reasonably dispense with the x-ray except for positive tuberculin reactors.

There is no evidence to indicate that a boy with a positive tuberculin test and a normal chest x-ray should be prohibited from engaging in competitive athletics. However, the undoubted stress and strain of athletic endeavor leads us to believe that a little more than routine examination should be given those boys with known positive tuberculin reactions. These tuberculin positive athletes should have chest plates taken at the beginning and preferably again at the end of each playing season. The director of student health at the University of Pennsylvania refuses to accept responsibility for tuberculosis developing in an athlete unless such a procedure is carried out.

Meyerding,[16] Lees and Rathbun all believe that the excessive physical strain of athletic competition, plus the physical changes of adolescence, definitely lower a boy's resistance to the invasion of tubercle bacilli. Certainly we would all agree that a boy with minimal or healed adult type tuberculosis should not be subjected to the physical wear and tear of athletic competition which might result in permanent invalidism or death.

The control of tuberculosis is not at all difficult, and certainly it is not spectacular. We do not wish to leave the impression that athletes are peculiarly susceptible to tuberculosis, or that the athlete is the only tuberculosis problem among our high school and college students. However, we do contend that any boy participating in high school or college athletics has the moral right to a complete physical examination which includes scientific tests and x-rays to exclude the possibility of symptomless tuberculosis. This is a definite obligation of school authorities which, at the present time, is being sadly neglected.

We have no more right to allow a boy or girl to play football or basketball without examining for tuberculosis with the tuberculin test and x-ray than we have to allow the same youngsters to play these games without listening to the heart with the stethescope.

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Table I.

SCHOOLS WITH CASE FINDING PROGRAMS
TUBERCULOSIS

School	Tb. Test (Athletes)	Tb. Test	(All Students)
Southeast			
Georgia Tech	No.	No	
Auburn	No.	Yes (Begin 1939)	
Vanderbilt	No. (Fluoroscope)	Yes (Begin 1939)	Yes
Tennessee	No.	Yes (Begin 1939)	(85 per cent)
Mississippi	Yes	Yes (85 per cent)	
Mississippi State	Yes	Yes	
Kentucky	Yes	Yes	
Alabama)			
Florida)			
Georgia)	DID NOT ANSWER QUESTIONNAIRE		
Sewanee)			
North Central			
Illinois	No	No	
Chicago	No	Fluoroscope all	
Michigan	No	X-ray all	
Minnesota	No	Yes	Yes
Purdue	Yes	Yes	(87 per cent)
Wisconsin	Yes	Yes (87 per cent)	(87 per cent)
Notre Dame	Yes	Yes	
Missouri	Yes	Yes	
Indiana)			
Iowa)			
Northwestern)	DID NOT ANSWER QUESTIONNAIRE		
Ohio)			

Table II.

SCHOOLS WITH CASE FINDING PROGRAMS
TUBERCULOSIS

School	Tb. Test (Athletes)	Tb. Test	(All Students)
East and Northeast			
Pennsylvania	Yes	Yes	Yes
Pittsburgh	Yes	Yes	(66 per cent)
Yale	Yes	Yes	
Princeton	Yes	Yes	
Harvard	No	No	
Carnegie Tech	No	No	
Southwest			
Rice	Yes (Begin 1939)	No	
A. & M. College	No	No	
S. M. U.	No	No	(100 per cent)
T. C. U.	No	No	
Texas	No	No	
Baylor)			
Arkansas)	DID NOT ANSWER QUESTIONNAIRE		
Pacific			
Oregon State	No	Yes	Yes
Oregon	No	Yes	(75 per cent)
California	Yes	Yes	
Washington	No	Yes	
Stanford	No	No	
Southern California	No	No	
California at L. A.	No	No	
Washington State	DID NOT ANSWER QUESTIONNAIRE		

NOTICE

At the annual meeting of the Board of Regents of the American College of Chest Physicians held at the Chase Hotel, St. Louis, Missouri, on May 13th, 1939; a motion was duly proposed and passed to raise the annual dues of the fellows of the College from $5.00 per annum to $10.00 per annum; same to be effective January 1, 1940.

The above advance in dues was made necessary because of the need for supporting the vast amount of work being carried on by the College within organized medicine.

FRANK WALTON BURGE, M.D.
Chairman, Board of Regents

Organization News

COMMITTEE ON TUBERCULOSIS ORGANIZATION REPORTS

Dr. Benjamin Goldberg, Chicago, Illinois, First Vice-President of the American College of Chest Physicians and Chairman of the Committee for the Advancement of Tuberculosis Organization in Medicine submits the following report:

Since the reporting of Tuberculosis Committees in twenty five states as published in the December, 1939, issue of the journal; the following additional state medical societies have reported the establishing of Tuberculosis Committees as standing or as special committees of their state medical societies:

Wisconsin: A. A. Pleyte, M.D., Milwaukee, *Chairman;* W. T. Clark, M.D., Janesville, and L. O. Simenstad, M.D., Osceola.

New Jersey: Abraham E. Jaffin, M. D., Jersey City, *Chairman;* Samuel B. English, M.D., Glen Gardner, *Vice-Chairman;* Norman W. Burritt, M.D., Summit; Leo B. Drake, M.D., Franklin; Clyde M. Fish, M.D., Pleasantville; Henry H. Kessler, M.D., Newark; Marcus W. Newcomb, M. D., Browns Mills; Harold S. Hatch, M.D., Morristown; John E. Runnells, M.D., Scotch Plains; H. Burton Walker, M.D., Vineland; Joseph R. Morrow, M.D., Ridgewood; Henry B. Kessler, M.D., Newark; Roy Griffith M.D., Glenridge; and George J. Young, M.D., Morristown.

Illinois: Robert H. Hayes, M.D., Chicago, *Chairman;* Herman H. Cole, M.D., Springfield; and Frank J. Smejkal, M.D., Chicago.

PENNSYLVANIA TUBERCULOSIS COMMITTEE

The Tuberculosis Committee of the Pennsylvania State Medical Society for the year of 1940 is comprised of the following members: C. Howard Marcy, M.D., Pittsburgh, *Chairman;* John H. Bisbing, M.D., Reading; Royal H. McCutcheon, M.D., Bethlehem; S. J. Hawley, M.D., Danville; C. R. Phillips M. D., Harrisburg; Ross K. Childerhose, M.D., Harrisburg; J. Paul Frantz, M.D., Clearfield; Victor M. Leffingwell, M. D., Sharon; Elmer Highberger, M.D., Greensburg; O. S. Kough, M.D., Uniontown; Chas. A. Heiken, M.D., Philadelphia; and Chas. H. Miner, M.D., Wilke-Barre.

VIRGINIA TUBERCULOSIS COMMITTEE REPORTS

Dr. E. C. Harper, Richmond, Virginia, Director, Tuberculosis Out-Patient Service, State Department of Health, and Chairman of the Tuberculosis Committee of the State Medical Society reports that the Tuberculosis Committee was reappointed this year and that the other two members of the committee are: Dr. Dean B. Cole, Richmond and Dr. Frank B. Stafford, Charlottesville. The development of the Tuberculosis Out-Paient Service and the establishment of forty seven pneumothorax clinics have been the chief objectives of the committee. Dr. Harper reports that 3,734 chest punctures were given at the clinics on 355 patients without any accidents or casualties. X-rays were done on 5825 individuals.

The following recommendations were made by the committee:

(1) The use of paper films for mass examination of industrial plants, schools, and other groups. The advisability of checking all positive cases with stereoscopic celluloid films before a final diagnosis is made.

(2) Tuberculin tests in the public schools in Virginia should not be made unless arrangements are immediately available to x-ray all of the positive reactors. Clinical tuberculosis is so rare among the rank and file of the elementary schools, both white and colored, in the state, that it would probably be more advisable to spend the time and money with the high school and college groups.

(3) There is a definite need for more beds for negro patients. The increased capacity at the state negro sanatorium will only take care of half the present waiting list.

(4) The committee recommends that all public school teachers have an annual x-ray examination of their chests.

NORTH CAROLINA TUBERCULOSIS COMMITTEE REPORTS

Dr. Karl Schaffle, Asheville, North Carolina, Governor of the College for North Carolina and a member of the Committee for Tuberculosis Organization in Medicine reports that a campaign has been started to organize a Tuberculosis Committee in every County Medical Society of North Carolina. Letters have been directed to the presidents of each of the County Medical Societies requesting that such committees be appointed. Dr. S. M. Bittenger, Black Mountain, North Carolina is the Chairman of the State Tuberculosis Committee. He reports that one of the outstanding accomplishments of the state committee has been the establishing of a Tuberculosis Seminar which is now a permanent postgraduate course held in the summer of each year at Asheville. Dr. Karl Schaffle was the chairman for the Seminar last year and it was attended by fifteen physicians.

GEORGIA TUBERCULOSIS COMMITTEE REPORTS

Dr. Champ H. Holmes, Atlanta, Georgia, Chairman of the Georgia State Tuberculosis Committee and Past President of the American College of Chest Physicians submits a copy of the report made by the State Tuberculosis Committee before the House of Delegates of the Georgia State Medical Association at their annual session at Atlanta. Every member of the committee had submitted a report on local activities which is included in the complete report. We publish herewith abstracts of those reports:

Dr. H. C. Atkinson, Macon. Gives a full statistical report of the activities in Macon and Bibb County. During the past year 2339 patients were seen in the clinic and 3053 visits were made to tuberculous patients. They have in his county a very active pneumothorax clinic. Tuberculosis deaths in his county show a slight decline from 60 in 1937 to 57 in 1938. Dr. Atkinson raises the important question of the segregation in institutions for the far advanced cases. He states that it is not being done in his community.

Dr. William C. Cook, Columbus. A new County Tuberculosis Sanatorium has been opened during the past year. Clinics for adults and children are held once a week. The follow-up work by the county tuberculosis nurses is very efficient. Dr. Cook feels that more talks on tuberculosis should be made to the public, and has personally been active in this regard.

Dr. Robert V. Martin, Savannah. There is a tuberculosis committee of the local medical society. Much interest has been aroused in, and considerable activity directed toward, securing one of the planned state sanatoria in Savannah. A preventorium for children is now being operated. A detailed report of the Chatham-Savannah Tuberculosis Association gives an index to the fine work of this body.

Dr. R. C. McGahee, Augusta. Reports excellent work being done by the Augusta-Richmond County Tuberculosis Association; and by the department of tuberculosis of the local medical college. 800 students have been tuberculin tested. With the aid of the Junior Chamber of Commerce, the early diagnosis campaign is now being successfully launched.

Dr. T. H. Moss, Rome. One hundred and thirty cases of tuberculosis are under supervision and are visited by the county nurses. Through facilities of the Junior Service League, pneumothorax is being given to a limited number. There are no facilities for hospital care, and those cases needing it are sent to Alto.

Dr. John A. Simpson, Athens. Submits a detailed report for Clarke County. 20 clinics were held in 1938 and 226 individuals were x-rayed. There were 1508 field visits by the Public Health Nurses. At the present time 252 cases of contacts, suspects and positives are being kept under active supervision.

Dr. Ernest F. Wahl, Thomasville. With some help from the county health physician, Dr. Wahl is taking care of most of the tuberculosis needs in his section. He is quite active in giving pneumothorax refills and this includes returned cases from Alto.

Dr. Cleveland D. Whelchel, Gainesville. Reports an intense interest in tuberculosis by the members of the Hall County Medical Society. They have a very active tuberculosis committee. Extensive skin-testing has been done under the guidance of Drs. J. L. Meeds, E. L. Ward and Dr. W. R. Garner. All positive reactors are x-rayed.

Dr. H. C. Schenck, Atlanta. In Dr. Schenck, who is the head of the Tuberculosis Division of the Georgia Health Department, we have a committee member who is most valuable in correlating and intergrating the whole of the tuberculosis activities in the state.

In speaking for Fulton County, I am very happy in presuming at an early date, with the cooperation of our President, Dr. Ed Greene, the creation of a tuberculosis committee. The Atlanta Tuberculosis Association and the Battle Hill Sanatorium are continuing to do very creditable work. Under the leadership of Dr. Irwin Willingham we are off to a splendid start in launching our early diagnosis campaign. It is with regret, in spite of our concerted efforts, that tuberculosis was not given a more prominent place on the program of the annual state meeting this year. It will certainly be no fault of ours that it is not done at the next and subsequent meetings.

Respectfully submitted,

Champ H. Holmes, M.D.

GOVERNOR FOR IOWA REPORTS

Dr. J. Carl Painter, Dubuque, Iowa, Governor of the American College of Chest Physicians for Iowa appeared before the meeting of the Council of the Iowa State Medical Society, held on November 8th, and presented a request for the establishing of a Tuberculosis Committee for the State Medical Society. This is in keeping with the program advanced by the American College of Chest Physicians and a committee was appointed by the Council to investigate the matter and report to the Council at its next meeting.

(continued on page 26)

KANSAS TUBERCULOSIS COMMITTEE REPORTS

Dr. Henry N. Tihen, Wichita, Kansas, Chairman of the Tuberculosis Committee of the Kansas State Medical Association reports that the chief objective of his committee is to coordinate the work of all of the agencies in the state interested in tuberculosis work. They have made excellent progress along these lines during the past few years and a number of counties have carried on active tuberculosis work under the direction of the local county societies.

TUBERCULOSIS COMMITTEE FOR THE DISTRICT OF COLUMBIA

Dr. Wm. D. Tewksbury, Washington, D. C., Governor of the College for the District of Columbia reports that Dr. J. Winthrop Peabody has been appointed Chairman of the Tuberculosis Committee for the District of Columbia Medical Society. Dr. Tewksbury has served as the chairman of this committee three times in past years. Dr. Peabody, is the Second Vice-President of the American College of Chest Physicians.

MISSOURI TUBERCULOSIS COMMITTEE REPORTS

Dr. E. E. Glenn, Springfield, Missouri, Chairman of the Tuberculosis Committee of the Missouri State Medical Association and a member of the Committee for the Advancement of Organization in Medicine reports that the committee was instrumental in having a symposium on tuberculosis published in the November issue of the Journal of the Missouri State Medical Association. The following is a list of the subjects and the names of the authors:

The Prevention of Pulmonary Tuberculosis, Herbert L. Mantz, M.D., Kansas City, Missouri.

Symptoms, Signs and Diagnosis of Pulmonary Tuberculosis, J. A. Stocker M.D., Mount Vernon, Missouri.

Differential Diagnosis of Chronic Pulmonary Diseases, Dan M. Myers, M.D., St. Louis, Missouri.

Sanitarium Treatment of Tuberculosis, George D. Kettelkamp, M.D., Koch, Missouri.

Home Treatment of Pulmonary Tuberculosis, William M. Kinney, M.D., Joplin, Missouri.

Surgical Procedures in the Treatment of Pulmonary Tuberculosis, J. L. Mudd, M.D., St. Louis, Missouri.

Missouri Tuberculosis Association, Donald E. Pratt, Executive Secretary, St. Louis, Missouri.

NEW JERSEY TUBERCULOSIS COMMITTEE REPORTS

Dr. Marcus M. Newcomb, Browns Mills, New Jersey, Governor of the College for New Jersey reports that a bill was enacted by the State of New Jersey this year which will require mantoux testing in the schools for children, and health examinations and x-ray pictures of all employees of Boards of Education. Dr. Newcomb as a member of the New Jersey State Legislature has worked for the passing of these bills for nine years. During that time he was successful in having the bill passed in the Assembly five times but each time it was killed in the Senate.

Editorial Comment: This report by Dr. Newcomb is most gratifying and the Committee on Tuberculosis Organization in Medicine extends their congratulations to Dr. Newcomb upon his excellent work in behalf of this legislation.

NEW MEXICO TUBERCULOSIS COMMITTEE REPORTS

Dr. LeRoy S. Peters, Albuquerque, New Mexico, and Governor of the College for New Mexico reports that the Tuberculosis Committee of the New Meixco State Medical Association has sponsored the tuberculin testing of all school children in Bernalillo County (City of Albuquerque) and students at the University of New Mexico. X-rays are taken of all positive reactors which are sent to the Maytag Research Laboratories for reading. It is compulsory for tuberculin testing of all freshmen at the University of New Mexico.

FLORIDA HEALTH NOTES

Dr. M. Jay Flipse, Miami, Florida, Governor of the American College of Chest Physicians for Florida, published a paper in the December issue of the Florida Health Notes, monthly publication of the Florida State Board of Health. The article was entitled, "Tuberculosis Program in Florida has Shifted from School Surveys to Adults". The entire issue was turned over to articles on tuberculosis activities in Florida and in addition to Dr. Flipse, articles were contributed by Dr. A. J. Logie, Director of Tuberculosis, State Board of Health; Dr. R. D. Thompson, Superintendent of the State Tuberculosis Sanatorium; and Mrs. May Pinchon, Executive Secretary of the Florida Tuberculosis and Health Association.

PRESIDENT ELECT OF COLLEGE HONORED

Dr. John H. Peck, Oakdale, Iowa, President Elect of the American College of Chest Physicians was the guest of honor at a dinner given by the Johnson County Medical Society of Iowa on November 1st. A paper was presented by Dr. Henry C. Sweany, Director of Research of the Chicago Municipal Sanitarium entitled, "The Sequelae of Pulmonary Tuberculosis."

DR. FROST ACCEPTS POSITION

Dr. R. H. Frost, a Fellow of the American College of Chest Physicians has been appointed as Superintendent of the G. B. Cooley Sanatorium at Monroe, Louisiana. Dr. Frost was formerly superintendent of the Buena Vista Sanatorium, Wabasha, Minnesota.

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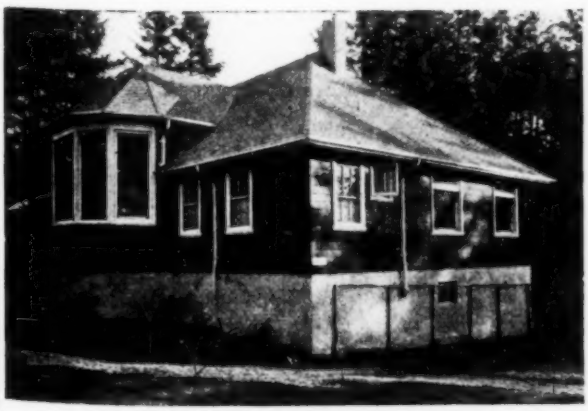

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MEDICAL DIRECTORS
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Dr. Ralph C. Matson, President of the American College of Chest Physicians, announces the appointment of the following committees:

COMMITTEE ON NOMINATIONS

John H. Peck, M.D., Chairman, Oakdale, Iowa; Champ H. Holmes, M.D., Vice-Chairman, Atlanta, Georgia; Walter E. Vest, M.D., Huntington West Virginia; Orville E. Egbert, M.D., El Paso, Texas; Harry Warren, M.D., San Francisco, California; Alfred A. Bussee, M.D., Jefferson, Wisconsin; Foster Murray M.D., Brooklyn, New York.

COMMITTEE FOR THE ADVANCEMENT OF UNDERGRADUATE TEACHING IN MEDICAL SCHOOLS

Edward W. Hayes M.D., Chairman, Monrovia, California; Jay Arthur Myers, M.D., Vice-Chairman, Minneapolis, Minnesota; Benjamin Goldberg, M.D., Chicago, Illinois; John H. Peck, M.D., Oakdale Iowa; William Atmar Smith M.D., Charleston, South Carolina; Julius L. Wilson, M.D., New Orleans, Louisiana; Edgar Mayer, M.D., New York City, New York; Earle Standlee, M.D., Washington, D. C.

COMMITTEE FOR THE ADVANCEMENT OF SCIENTIFIC PROGRAMS IN ORGANIZED MEDICINE

Champ H. Holmes, M.D., Chairman, Atlanta, Georgia; Warren C. Breidenbach, M.D., Vice-Chairman, Dayton, Ohio; John Crouch, M.D., Colorado Springs, Colorado; James S. Edlin, M.D., New York City, New York; Fred G. Holmes, M.D., Oakland, California; Harold G. Trimble, M.D., Oakland, California; H. I. Spector, M.D., St. Louis, Missouri; Frederick Slyfield, M.D., Seattle, Washington; Andrew L. Banyai, M.D., Wauwatosa, Wisconsin; Moses J. Stone, M.D., Boston, Massachusetts.

SANATORIUM COMMITTEE

Harry Warren, M.D., Chairman, San Francisco, California; Alexius M. Forster, M.D., Vice-Chairman Colorado Springs, Colorado; Orville E. Egbert, M.D., El Paso, Texas; Chas. M. Hendricks, M.D., El Paso, Texas; Louis Mark, M.D., Columbus, Ohio; William Devitt, M.D., Allenwood, Pennsylvania; B. A. Shepard, M.D., Kalamazoo, Michigan; Harry Golembe, M.D., Liberty, New York; C. H. Gallenthien, M.D., Valmora, New Mexico; John E. Nelson, M.D., Seattle, Washington.

Dr. Walter E. Vest of Huntington, West Virginia, Governor of the American College of Chest Physicians for West Virginia, was appointed as the President of the Southern Medical Association. In his talk before the annual meeting, Dr. Vest advocated that a Secretary of Health be set up in the Cabinet of the President of the United States, and that all of the public health activities be entered under the direction of the Secretary of Health.

Dues in the American College of Chest Physicians will be due on January 1st, 1940. The College has no paid executives and in order to facilitate the functioning of the organization, the Secretary-Treasurer requests that the members please mail their dues promptly.

S. W. Schaefer, M.D., a Fellow of the American College of Chest Physicians, has moved from Colorado Springs, Colorado, to 178 East Seventieth Street, New York City, N. Y.

Arnold Shamaskin, M.D., a Fellow of the American College of Chest Physicians, has moved from 15 Central Park, West, to 667 Madison Avenue, New York City, N. Y.

DR. MINNIG RESIGNS FROM THE AMERICAN ACADEMY OF TUBERCULOSIS PHYSICIANS

Dr. Arnold Minnig, Denver, Colorado, a Fellow and charter member of the American College of Chest Physicians, desires to notify his many friends through the columns of DISEASES OF THE CHEST that he has tendered his resignation as a member and as the secretary-treasurer of the American Academy of Tuberculosis Physicians. Dr. Minnig states:

"...at after observing the activities of the ...ous organizations in the specialty of chest ...iseases, he feels that the American College of Chest Physicians is best constituted to serve the interests of the chest specialists in his country."

Editor's Note: Dr. Arnold Minnig has, no doubt, been in closer contact with the inner workings of the American Academy of Tuberculosis Physicians than any other one individual and we are publishing the above statement without reservation at Dr. Minnig's request.

NOTICE

Through an error the name of Mrs. Theodore B. Sachs, Executive Secretary of the Tuberculosis Institute of Cook County of Chicago was omitted as the author of the article on the History of the Tuberculosis Institute of Cook County and Chicago which was published in the October and November issues of DISEASES OF THE CHEST.
Editor.

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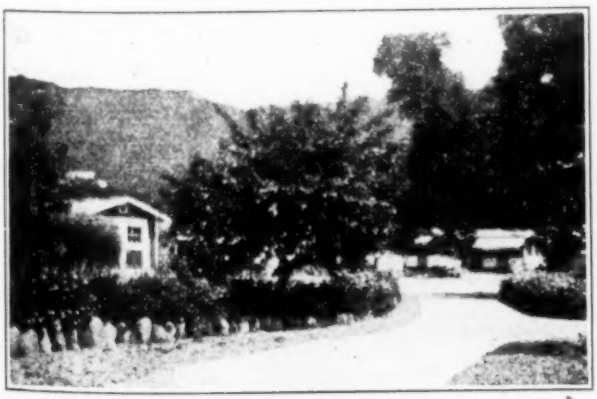

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E. W. HAYES, M.D., Medical Director

Dr. Ralph C. Matson, President of the American College of Chest Physicians, announces that a Membership Committee has been appointed, whose duty it will be to stimuate membership in the College among physicians who have the necessary qualifications for Fellowship. This committee will work in close cooperation with the Governors of the College and with the members of the Board of Regents.

The committee consists of the following members:

Arnold Minnig, M.D., Chairman, Denver, Colorado; John F. Allen, M.D., Omaha, Nebraska; E. W. Hayes, M.D., Monrovia, California; Jerome R. Head, M.D., Chicago, Illinois; George Ornstein, M.D., New York City, New York; Robert Homan, M.D., El Paso, Texas; E. J. O'Brien, M.D., Detroit, Michigan; Oscar S. Proctor, M.D., Seattle, Wishington.

THE 1940 PNEUMOTHORAX DIRECTORY

Listing the Fellows of the **American College of Chest Physicians** who are qualified and equipped to administer artificial pneumothorax, will be available after the 15th of January. Special designations for physicians who are thoracic surgeons, bronchoscopists, laryngologists, and who specialize in other allied fields of chest diseases will be made in the Directory.

The 1940 Directory will again show a marked increase in the Fellowship of the College, and in the listings over that of the previous directories issued by the American College of Chest Physicians. There will also be a number of listings of physicians who are Fellows of the College and who are resident in countries other than the United States.

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